PYCNOMETER
Model 290

To establish the Density of Fluids and Pastes

testing equipment for quality management

ERICHSEN
since 1910

Technical Description and Operating Instructions

BS 3900:A 12
SIS 18 41 11
SNV 37 100
VDA 621-103

DIN 53 217
ISO 2811

Purpose and Application

Pycnometers are used to establish the density of coating materials and other fluids and paste products.

Test Principle

The density **r** of a substance is the ratio of its mass **m** to its volume V:

Unless otherwise specified, the density of the coating material is given at 20 °C. The density at 20 °C may be specified as $\mathbf{r}_{20}$.

The density is measured by means of Pycnometers. The Pycnometer container is filled with fluid. The difference in weight between the empty and full Pycnometer and it internal volume enables the density to be calculated.

Design and Function

The **Pycnometers** consist of a container and a lid with an overflow hole. There are two versions of Pycnometers available:

- Instruments made of anodized aluminium and
- Instruments made of stainless steel

each with a volume of

- 50 ccm or
- 100 ccm.

The standard ERICHSEN Pycnometers are made to a tolerance of 0.2 %. Upon request and at an extra price, all instruments can be made to a tolerance of 0.1 % and supplied with a certificate of the Official Bureau of Weights and Measures.
The 100 ccm Pycnometer is for general use, whereas the 50 ccm version is used primarily for paste materials, as it is easier to handle for this application.

Test Procedure

After being brought to 20 °C the Pycnometer is weighed and then filled with the specimen material, also at a temperature of 20 °C, up to a level just below the top edge, in such a way that trapping of air is avoided. The lid is then placed into position with a light turning movement and surplus material escaping through the overflow hole is wiped off. The instrument is then weighed again. To open the Pycnometer a special opening aid can be supplied as accessory.
For exact calculations please refer to the formula described in DIN 53 217 - Part 2.

Special Note
In order not to impair the volumetric accuracy, hard or sharp objects should not be used for cleaning.
When establishing the density of acid or alkali substances, we recommend to use **Pycnometers** made of stainless steel only, as instruments made of anodized aluminium are not resistant against these substances.

Reference Class:
All Models 290 are supplied with a Manufacturer's Certificate M in accordance with DIN 55 350-18 that includes among others the following information:

Volume (in cm^3) of Pycnometer, product indification, test equipment used with calibration status, date, name of inspector.

The volumes of the Pycnometers are determined by using of distilled water as test medium (tolerance 0.2%). By an extra charge, the Pycnometers are also available with a tolerance of 0.05 %. The Models 290 can also be supplied with a conformity assessment (instead of official calibration certificate, according to the new calibration law dated 01.01.2015)

Ordering Information	
Ord.-No.	**Product Name**
0018.02.31	**Pycnometer, Model 290/I** Anodized aluminium, volume 100 ml
0018.04.31	as Order No. 0018.02.31, but with conformity assessment and test certificate
0018.01.31	**Pycnometer, Model 290/II** Anodized aluminium, volume 50 ml
0018.03.31	as Order No. 0018.01.31, but with conformity assessment and test certificate
0163.01.31	**Pycnometer, Model 290/V** Stainless steel, volume 100 ml
0163.03.31	as Order No. 0163.01.31, but with conformity assessment and test certificate
0162.01.31	**Pycnometer, Model 290/IV** Stainless steel, volume 50 ml
0162.03.31	as Order No. 0162.01.31, but with conformity assessment and test certificate

Accessories	
Ord.-No.	**Product Name**
0476.01.32	Opening aid

The right of technical modifications is reserved.
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ERICHSEN GmbH & Co. KG
Postfach 1264 | 58652 Hemer | Germany | Tel. +49(0)2372-9683-0 | Fax +49(0)2372-6430 | www.erichsen.de | info@erichsen.de